COLOR VIDEO CAMERA VK-C840E

INSTRUCTION MANUAL

English

BEFORE USING

To obtain the best performance and ensure years of trouble-free use, please read this instruction manual carefully.

FEATURES

- **Beautiful, clear picture**
  SATICON, which is used for high grade television broadcasting cameras, is used, so a clear picture with little after image and noise can be obtained from a dark scene at approx. 10 Lux.
- **Auto focusing function**
  An auto focusing function which sets the zoom lens automatically in focus is provided. Anyone can take pictures in good focus.*
  * Auto focusing is not suitable for some subjects. Refer to page 6 for details.
- **Auto white balance**
  The white balance is automaically set by just pressing a switch.
- **Auto iris function**
  The iris automatically opens and closes depending on the brightness of the picture to be taken, so it is not necessary to adjust the iris each time.
- **Zoom lens (x 6) with MACRO position**
  The lens attached is a zoom lens (x 6) and electrical zoom operation is possible by operating a switch. Contact photography is also possible because a MACRO position is provided.
- **Fade in/out functions**
  These allow a scene and sound to gradually fade in and fade out by simply pressing a button.
- **Instant review switch**
  Provided Instant review switch allows checking of recorded material quickly when used together with the portable video recorder.

CONTENTS

FEATURES 1
PRECAUTIONS 2
DESCRIPTION OF CAMERA 3
CONNECTION DIAGRAM WITH PORTABLE VTR 4
CONNECTION DIAGRAM WITH TABLE TYPE VTR 4
CAMERA RECORDING (by auto focus and auto white balance) 4
ALARM/WARNING INDICATOR 5
ADJUSTING THE WHITE BALANCE 5
AUTO FOCUS ..... 5—6
FOCUSING MANUALLY 6
ZOOM OPERATION 6
MACRO MECHANISM 6
INSTANT REVIEW 6
AUTO IRIS MECHANISM 7
STAND-BY SWTICH 7
FADE-IN/FADE-OUT FUNCTION 7
PAUSE POLARITY SWITCH 8

DIOPTER CONTROL 8
HOW TO ASSEMBLE OPTIONAL ACCESSORY 8
PROBLEM GUIDE..... 8
SPECIFICATIONS..... 9

PRECAUTIONS

When you use this camera for the first time or after a long period of storage, with the lens cap in place and the stand-by switch on the top of the camera set to STAND-BY, supply power for 30 — 60 minutes before use.

- **Caution at high temperature**
  Be sure not to leave it in a place at high temperature exceeding 50°C. The precious SATICON will deteriorate. Be careful not to leave the unit in the following places:
  * Inside a car with the window closed and in direct sunshine.
  * Near heating appliances.
  * In direct sunshine in summer.
  * Inside a storeroom with a galvanized sheet iron roof in summer.
- **Caution in burning-in**
  When the same picture is taken continuously for a long period of time, the burning-in phenomenon may occur; do not supply power to the camera other than when taking pictures.
- Do not wind the power cord, camera cable or VTR cable around the camera body. When it is left as it is for a long time, a trace may remain.
- Do not use the unit in a place with strong electric waves or magnetism if possible.
- Water or dust entering the camera causes trouble and accidents. Avoid using the unit in rain or snow.
- Be sure not to point the camera toward the sun or strong light.
- Be careful in that when the surface of the case is wiped off using volatiles such as benzine, alcohol and thinner, etc. or a chemically treated cloth, it may be deformed or the paint peeled off.
- Do not apply strong vibration or shock.
- Do not open the case.
- The color tone may change for a while when the camera is turned abruptly during photography. This is the effect of earth magnetism; it does not indicate trouble.
- Do not shoot bright objects such as fluorescent lamps.
- This magnifier lens on the hood is a convex lens, so be careful in sunlight. When the lens is left facing the sunlight, it may damage the phosphorescent surface of the cathode ray tube.
- Do not touch the focus control ring or zoom ring with the hand when the auto focus or power zoom is operating. It can cause trouble.
- Do not hold the microphone during carrying; it may be damaged.
- Wipe off the surface of lens if the tiny droplets of water come into contact with the lens to keep from getting musty.

A DESCRIPTION OF CAMERA

❶ Focus adjust ring
Move this ring for manual focusing.

❷ Macro button
Turn the zoom lever while pressing this button for contact (MACRO) photography.

❸ Zoom lever
Move this lever for manual zooming.

❹ Iris lock switch
Press this switch for intermittent iris lock.

❺ Focus AUTO/MANUAL select switch
- Set this switch to "AUTO" for continuous focusing. Focusing is done automatically as long as the camera is aimed at the object.
- Set this switch to "MANUAL" and then turn the focus adjust ring for manual focusing.
- Set this switch to "MANUAL" and then press the auto focus switch ❻ for intermittent auto focusing.

❻ Auto focus switch
Set the Focus AUTO/MANUAL select switch ❺ to "MANUAL" and then press this switch for intermittent focusing. Auto focusing takes place while the switch is pressed.

❼ Earphone jack

❽ External microphone jack
This is the external microphone connection terminal. When the external microphone is connected, the built-in microphone does not work. The jack of this unit is used for the mini-plug. Connect the mini-plug type high impedance (10kΩ) microphone to this jack.

❾ Remote control connector for optional remote control unit

❿ Iris control
Increase the light incident to lens in the back light by turning this knob.

⓫ Color balance control knob
The picture can be made reddish or bluish by turning this knob. Normal position is center.

⓬ Fade switch
It is possible to fade in or fade out the picture and sound by pressing this switch. (Refer to page 7 for details.)

⓭ White balance set switch
Depress this switch to set the white balance. White balance is automatically obtained.
Refer to page 5 for details. szobában

⓮ Outdoor/indoor select switch
Selects Outdoor or Indoor depending on the place of photography. szabadban

⓯ Power zoom switch
This switch performs zooming electrically.
"W" side: Picture becomes wider gradually.
"T" side: Picture becomes telescopic.

⓰ Adaptor shoe
A camera light can be installed in this shoe.

⓱ Microphone
This is a non-directivity electret condenser microphone.

⓲ Auto focus window
The distance is measured automatically through this window when the auto-focus function is operated.

⓳ Stand-by switch
Set this switch to "STANDBY" when the pause mode continues for more than several minutes.
Power consumption is greatly reduced.

⓴ Instant review switch
Whether recording is taking place or not can be checked quickly by pressing this switch.

㉑ Hand strap

㉒ Electronic viewfinder
The picture can be monitored by a 1" cathode ray tube. It is convenient for focusing and picture angle determination. The picture played on the VTR can also be seen.

㉓ Start/stop switch
Starting and stopping VTR recording is possible by pressing this switch. When this switch is pressed with the VTR placed in the record pause mode, the tape starts running to start recording.
When this switch is pressed again, the tape stops and the VTR enters the record/pause mode.

㉔ Pause polarity switch
Change the position of this switch if the Recording indicator (V) in the EVF does not match the operating mode of the VTR.

㉕ White balance warning/standby mode indicator (W)
The indicator glows red when the camera power is first turned on and will continue to light until the camera has been white balanced.
The indicator glows green when the Stand-by switch is in the "STANDBY".

㉖ Battery warning indicator (B)
The battery warning indicator is on when the battery level in the portable VTR becomes low. Replace or recharge the battery.

㉗ Low light indicator (L)
When the low light indicator is on, the light level may be inadequate. Additional illumination may be required.

㉘ Record indicator (V)
It is used to signal the camera operator that a recording is actually being made. When the indicator is on, the video cassette recorder is recording. When the indicator is off, a recording is not taking place.

B CONNECTION DIAGRAM WITH PORTABLE VTR

- Do not use the extension cable VK-CK61E (10m), VK-CK65E (5m) (option) if possible when operating the HITACHI portable VTR using battery.
  When the battery voltage drops, the voltage drop is greater proportionate to the length of the extension cable, and the camera may not operate normally.

C CONNECTION DIAGRAM WITH TABLE TYPE VTR

The AC adaptor A-C70E (optional) is required to connect the VK-C840E to the table type video deck.

❶ To pause (GRAY, PAUSE)
❷ To video input (BLACK, VIDEO OUT)
❸ To video output (WHITE, VIDEO IN)
❹ To audio input (RED, AUDIO OUT)
❺ To audio output (YELLOW, AUDIO IN)

- Use one camera extension cable VK-CK61E (10m) or 2 VK-CK65E (5m) at most, when using VK-C840E in combination with the AC adaptor A-C70E. When an extension cable longer than the above is connected, the voltage drops in proportion to the resistance of the extended length; be careful of this.

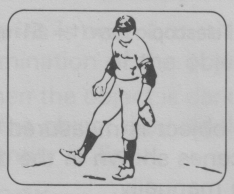
D CAMERA RECORDING (by auto focus and auto white balance)

1. Connect the camera to your Hitachi Portable VTR as shown previously (Diagram [B]) or to an optional power supply and then to a Hitachi table-top model VTR (Diagram [C]).
2. Remove the lens cap.
3. Turn on VTR and optional power supply if used. When using a TV as a monitor when recording, set its volume to minimum to avoid feedback.
4. Place the VTR in the record/pause mode by pressing the record and play buttons simultaneously (a cassette with its safety tab must be loaded in the VTR).
5. Adjust the controls on camera. See diagram [D].
   ❶ Set the Standby switch to "NORM".
   ❷ Set the Fucos AUTO/MANUAL select switch to "AUTO".
   ❸ Place the Outdoor/Indoor selector switch in proper position either outdoor or indoor according to the light shining on the object.
   ❹ Set the Iris and White balance controls to their click points.
   ❺ While aiming a white object to fill the screen, press the White balance set button until the indicator "W" in EVF goes off for automatic white balancing.

   Now camera adjustment is complete.
   Check that all indicators in EVF have gone out. If the indicator is lit, see "ALARM/WARNING INDICATORS" on page 5.
6. Press the start/stop switch on the camera. VTR begins to record.
7. Press the start/stop switch on the camera to pause the VTR at any time. Press the switch again to resume recording.
8. Press the start/stop switch to set the VTR to the record/pause mode after recording is complete, and then press the stop button on the VTR to set to the stop mode.
   Note: • When stopping recording while using the camera with a Hitachi portable VTR, be sure to press the start/stop switch on the camera to set to the record/pause mode and then press the stop button on the VTR.
   It is not possible to stop recording by pressing the stop button on the VTR.
   • To free from blurred pictures, secure the camera with both hands, with upper arms held close to your body.

ALARM/WARNING INDICATORS

All indicators in EVF should go off before recording starts.



If indicator "W" glows red, white balance is required.
If it glows green, set the power save switch to "NORM".

Capacity of the battery in the VTR is low.
Replace the battery with a charged one.
* This does not apply to VTRs which use AC power.

Illumination of the object is too low. More illumination is required.

Tape runs and recording has started before pressing the start/stop switch. Press the switch again.

E ADJUSTING THE WHITE BALANCE

Color changes slightly depending on the light shining on the object. The human eyes can adapt to changes of light, so an object is seen with same color indoors and outdoors. However, the camera cannot adapt automatically, so it is required to adjust whenever you use the camera.

1. Select the Outdoor/Indoor select switch according to the light source exposing the object.
2. Set the Iris and White balance controls to their click points.
3. Shoot a white wall or paper to fill the screen of the viewfinder.
4. Press and hold the White balance set button until the indicator "W" in the viewfinder goes off.

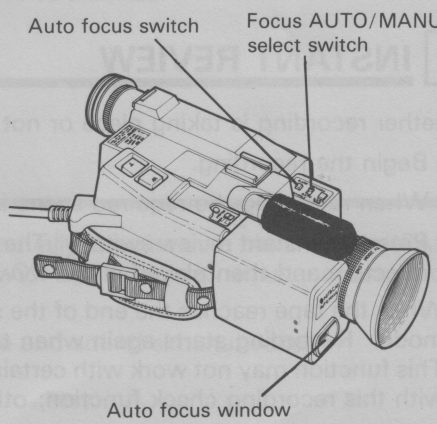
Fine tone adjustment
The white balance control is provided for adjusting the color tone.
While monitoring a picture on a color monitor, rotate the control clockwise for reddish pictures and rotate it counterclockwise for bluish pictures.

* When the power to the camera has been turned off and then on, white balance should be set again.

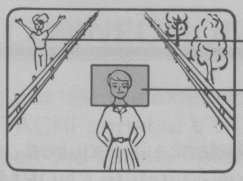
Setting white balance
White balance may not be set when the white balance set switch is pressed in the cases shown below.
- For approx. 5 seconds after power is supplied when a picture appears in the viewfinder and until the picture is stabilized.
- While the camera or object is moving.
- For 2 — 3 seconds just after a strong light such as the camera light enters the lens.

F AUTO FOCUS

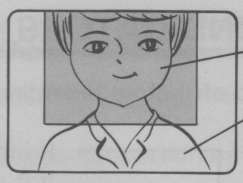
The auto focus mechanism is incorporated in this unit. In the auto focus mode, when taking a picture of an object pointing the camera toward it, the ordinary object is automatically focused and a picture with optimum focus is taken.
Set the Focus AUTO/MANUAL select switch to "AUTO" for continuous operation of auto focus.
To operate auto focus intermittently, set the Focus AUTO/MANUAL select switch to "MANUAL" and then press the auto focus switch; auto focus is done while the switch is pressed.



Distance measurement range
With this auto focus mechanism, the distance in the range of the frame shown in the diagram, in the picture taken by SATICON, is measured. So, place the object on which it is desired to focus in the center of the picture if possible.



In wide angle (f = 8.5 mm)



Telescopic view (f = 51 mm)

■ OBJECT HARD TO AUTO FOCUS

With auto focusing, the distance between the Auto focus window and the object is measured and the focus adjust ring is automatically turned for focusing. However, with the scenes shown in the diagram, the auto focus may not operate properly. In such a case, perform focusing manually.

Refer to diagram [F].

- Do not touch the focus adjust ring with the hand during the auto focus operation. Be careful not to close the rangefinder window.

G FOCUSING MANUALLY

1. Watch the picture on the electronic viewfinder. Set to zoom-up while moving the zooming lever.
2. Focus with the focus adjust ring so that the zoomed up picture can be seen clearly.
   * When focusing is performed without zooming up, the picture may become out of focus when the zooming up is done during actual photographing.

H ZOOM OPERATION

With the W side pressed : Picture gradually widens.
With the T side pressed : Picture gradually becomes telescopic.

- **MANUAL ZOOMING OPERATION**
  Turn the zooming lever or zooming ring for zooming operation.

I MACRO MECHANISM

A macro mechanism is provided for this unit. Taking a picture of a subject as close as 1 cm from the lens is possible.

1. Remove the lens hood.
2. Set the Focus AUTO/MANUAL select switch to "MANUAL".
3. Turn the zooming lever to "MACRO" while pressing the macro switch.
4. Move the zooming ring in the range of MACRO (green line on the zooming ring) for focusing.

J INSTANT REVIEW

Whether recording is taking place or not can be checked quickly (when VT-7E or VT-6800E is used).

1. Begin the recording.
2. When recording the required scene is complete, press the start/stop switch to stop the tape running.
3. Press the instant review switch. The last few seconds of the recorded scene is played back in the reverse direction and then played in the forward direction.

- When the tape reaches the end of the scene you have just recorded, the VTR returns to the record/pause mode. Recording starts again when the start/stop switch is pressed again.
- This function may not work with certain VTRs. With Hitachi VTRs, the VT-7E and VT-6800E are provided with this recording check function; other VTRs are not.

N PAUSE POLARITY SWITCH

If when using VHS VTR other than Hitachi's, the record indicator "V" in the viewfinder goes off during recording and lights during pause (in reverse to the actual operation), change the position of this switch. It is not required to change over the switch when a Hitachi VTR is used.

O DIOPTER CONTROL

Even a shortsighted or longsighted person can adjust the viewfinder so that it is easy to see.

P HOW TO ASSEMBLE OPTIONAL ACCESSORY

Refer to diagram.
Note: The built-in microphone is cut off automatically when an external microphone is connected.

PROBLEM GUIDE

Phenomenon	Cause	Remedy
Picture does not appear in the viewfinder.	• Is the camera cable connected properly? • Is the power switch of the portable VTR or AC adaptor set to "ON"? • Is the stand-by switch set to "NORM"? • Is the lens cap removed from the lens?	• Connect the camera cable securely to the portable VTR or the AC adaptor. • Set it to "ON". • Set the stand-by switch to "NORM". • Remove the lens cap.
Auto iris does not work.	• Is the iris control knob set to click position?	• Set it to click position.
Auto focus does not work or malfunctions.	• Is the object too dark or too far? • Is the Auto focus window closed? • Is the focus AUTO/MANUAL select switch set to "AUTO"?	• Refer to the "Object hard for auto focus" on covering page 5. • Do not close the window. • Set the focus AUTO/MANUAL select switch to "AUTO".
The actual color and the color of the played picture differ greatly.	• Is the white balance indicator "W" lighting red?	• Adjust the white balance so that the indicator "W" goes off. Refer to page 5 for details.
Camera recording is not possible.	• Is the stand-by switch set to "NORM? • Is the battery charge indicator "B" lighted up? (When combined with the portable VTR.) • Is the pause polairty switch positioned correctly?	• Set it to "NORM". • Replace the battery with a fully charged battery. • Change over the position depending on the VTR connected. Refer to page 8 for details.

SPECIFICATIONS

System:	Uni-frequency separation system
Signal type:	Based on PAL system
Camera tube:	1/2" SATICON
Synchronization system:	Internal synchronization
Horizontal resolution:	Better than 270 TV line
Video output:	1 Vp-p 75Ω (Unbalanced)
Video S/N ratio:	45 dB or more
Standard object luminance:	500 lux
Minimum luminance required:	10 lux
Built-in microphone:	Non-directivity electret condenser microphone
External mic input:	−65 dB, high impedance
Audio line output:	−20 dB, low impedance
Lens:	F1.2, f = 8.5 — 51 mm zoom (x 6) (with auto focus, auto iris, power zoom, macro mechanism)
Lens mount:	Special mount
Dia. of filter screw:	52 mm, thread pitch 0.75 mm
Viewfinder:	Electronic viewfinder system Cathode ray tube: 1" cathode ray tube
Color temperature control:	From tungsten bulb illumination to cloudy weather
Automatic sensitivity control range:	10 — 100,000 lux
Power voltage:	DC 12V
Power consumption:	4.2W (When Auto focus switch and power zoom are in manual mode)
External dimensions:	140(W) x 121(H) x 296(D) mm
Weight:	Approx. 1.5 kg

* The specifications and external appearance of this unit may be changed without notice for improvement.